CLAIMS

1. A recording apparatus for recording a light interference pattern of at least two coherent lights into a recording medium as a spatial change of a refractive index, the apparatus comprising:

a pulse oscillation laser for generating coherent light;

a signal light optical system for introducing coherent signal light based on the coherent light to the recording medium via a Fourier Transform lens;

a reference light optical system for introducing coherent reference light based on the coherent light to the recording medium;

a spatially modulating device disposed in the signal light optical system; and

a pulse oscillation controlling device for controlling a oscillation timing of the laser.

2. A recording apparatus for recording a light interference pattern of at least two coherent lights into a recording medium as a spatial change of a refractive index, the apparatus comprising:

a continuous oscillation laser for generating coherent light;

a signal light optical system for introducing coherent signal light based on the coherent light to the recording medium via a Fourier Transform lens;

a reference light optical system for introducing coherent reference light based on the coherent light to the recording medium;

a spatially modulating device disposed in the signal light

optical system;

an optical shutting device disposed in the signal light optical system for selectively passing or obstructing the signal light; and

an optical shutter controlling device for controlling an open time and an open timing of the optical shutting device.

3. The recording apparatus according to claim 1, further comprising:

a moving device for changing a position of the recording medium relative to positions of the signal light and the reference light.

4. The recording apparatus according to claim 2, further comprising:

a moving device for changing a position of the recording medium relative to positions of the signal light and the reference light.

5. The recording apparatus according to claim 1, wherein

the spatially modulating device is one of a phase modulating device and an amplitude modulating device.

6. The recording apparatus according to claim 2, wherein

the spatially modulating device is one of a phase modulating device and an amplitude modulating device.

7. The recording apparatus according to claim 2, wherein

the optical shutting device is one of a phase modulating device and an amplitude modulating device.

8. The recording apparatus according to claim 1, wherein

the pulse oscillation controlling device controls a pulse width of the laser.

9. A reproduction apparatus for reproducing information on the basis of a light interference pattern of at least two coherent lights recorded in the recording medium as a spatial change of a refractive index, the apparatus comprising:

a pulse oscillation laser for generating coherent light;

a reference light optical system for introducing coherent reference light based on the coherent light to the recording medium;

a photodetecting device for receiving diffraction light based on the reference light from the recording medium via an inverse Fourier Transform lens; and

a pulse oscillation controlling device for controlling an oscillation timing of the laser.

10. A reproduction apparatus for reproducing information on the basis of a light interference pattern of at least two coherent lights recorded in the recording medium as a spatial change of a refractive index, the apparatus comprising:

a continuous oscillation laser for generating coherent light;

a reference light optical system for introducing coherent reference light based on the coherent light to the recording medium;

a photodetecting device for receiving diffraction light based on the reference light from the recording medium via an inverse Fourier Transform lens;

an optical shutting device disposed in the reference light optical system for selectively passing or obstructing the reference light; and

an optical shutter controlling device for controlling an open time and an open timing of the optical shutting device.

11. The reproduction apparatus according to claim 9, further comprising:

a moving device for changing a position of the recording medium relative to a position of the reference light.

12. The reproduction apparatus according to claim 10, further comprising:

a moving device for changing a position of the recording medium relative to a position of the reference light.

13. The reproduction apparatus according to claim 9, wherein the photodetecting device is a CCD device.

14. The reproduction apparatus according to claim 10, wherein the photodetecting device is a CCD device.

15. The reproduction apparatus according to claim 9, wherein the photodetecting device is a CMOS device.

16. The reproduction apparatus according to claim 10, wherein the photodetecting device is a CMOS device.

17. The reproduction apparatus according to claim 10, wherein the optical shutting device is one of a phase modulating device and an amplitude modulating device.

18. The reproduction apparatus according to claim 9, wherein the pulse oscillation controlling device controls a pulse width of the laser.

19. A recording reproduction apparatus for recording a light interference pattern of at least two coherent lights into a recording medium as a spatial change of a refractive index and reproducing the recorded pattern, the apparatus comprising:

a pulse oscillation laser for generating coherent light;

a signal light optical system for introducing coherent signal light based on the coherent light to the recording medium via a Fourier Transform lens;

a reference light optical system for introducing coherent reference light based on the coherent light to the recording medium;

a spatially modulating device disposed in the signal light

optical system;

a photodetecting device for receiving diffraction light based on the reference light from the recording medium via an inverse Fourier Transform lens; and

a pulse oscillation controlling device for controlling an oscillation timing of the laser.

20. A recording reproduction apparatus for recording a light interference pattern of at least two coherent lights into a recording medium as a spatial change of a refractive index and reproducing the recorded pattern, the apparatus comprising:

a continuous oscillation laser for generating coherent light;

a signal light optical system for introducing coherent signal light based on the coherent light to the recording medium via a Fourier Transform lens;

a reference light optical system for introducing coherent reference light based on the coherent light to the recording medium;

a spatially modulating device disposed in the signal light optical system;

a first optical shutting device disposed in the signal light optical system for selectively passing or obstructing the signal light;

a second optical shutting device disposed in the reference light optical system for selectively passing or obstructing the reference light;

an optical shutter controlling device for controlling an open time and an open timing of the first optical shutting device and the

second optical shutting device; and

a photodetecting device for receiving diffraction light based on the reference light from the recording medium via an inverse Fourier Transform lens.

21. The recording reproduction apparatus according to claim 19, further comprising:

a moving device for changing a position of the recording medium relative to positions of the signal light and the reference light.

22. The recording reproduction apparatus according to claim 20, further comprising:

a moving device for changing a position of the recording medium relative to positions of the signal light and the reference light.

23. The recording reproduction apparatus according to claim 19, wherein

the spatially modulating device is one of a phase modulating device and an amplitude modulating device.

24. The recording reproduction apparatus according to claim 20, wherein

the spatially modulating device is one of a phase modulating device and an amplitude modulating device.

25. The recording reproduction apparatus according to claim 20, wherein

each of the first optical shutting device and the second optical shutting device is one of phase modulating device and amplitude modulating device.

26. The recording reproduction apparatus according to claim 19, wherein

the photodetecting device is a CCD device.

27. The recording reproduction apparatus according to claim 20, wherein

the photodetecting device is a CCD device.

28. The recording reproduction apparatus according to claim 19, wherein

the photodetecting device is a CMOS device.

29. The recording reproduction apparatus according to claim 20, wherein

the photodetecting device is a CMOS device.

30. The recording reproduction apparatus according to claim 19, wherein

the pulse oscillation controlling device controls a pulse width

of the laser.